

Abstract Submitted  
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**Hydrodynamics of High Dive and Water Entry Related Injuries.**

CAROLINE COHEN, THBAULT GUILLET, DAVID QUR, LadHyX, Ecole polytechnique, PEKO HOSOI, MIT, CHRISTOPHE CLANET, LadHyX, Ecole polytechnique — Diving is the sport of jumping or falling into water from a platform, usually while performing acrobatics. For high diving competitions the initial height is 27 meters. From this height, the entry in water occurs at 85 km/h and is very technical to avoid injuries. Several risks come out of the violent impact at the air/water interface if the body is not perfectly vertical and stiffened, and the formation and collapse of the air cavity around the diver. Another issue among diver, underlined by David Colturi, a top level RedBull Cliff Diver, is the injury of adductor muscles due to the spreading of legs underwater, and which limits the number of dives a jumper is able to perform per competition day. In this study, we investigate experimentally the dynamics of the jumper underwater and the hydrodynamics causes of injuries in high diving, both in the field by monitoring several dives of David Colturi during his training and in simplified laboratory experiments in order to understand the underlying physics.

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